

# Programming with Skeletons

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Distributed systems: paradigms and models

# What will we learn ?

- \* There are different ways to program with skeletons
- \* What are the widely diffused tools and libraries
- \* How to program with them

# A common structure for all the lessons

- \* For each system we will discuss:
  - \* Brief History
  - \* General considerations
  - \* Type of skeletons supported
  - \* Implementation aspects
  - \* Target Architecture
  - \* Sample programs

# History

- \* Who implemented it ? When ?
- \* Is it maintained ?
- \* Where can it be found ?



# General Considerations

- \* Details about the model
- \* Assumption made by system designers
- \* System characteristics

# Types of Skeleton

- \* Which are the type of skeletons it supports ?
- \* Eg. Stream Parallel, Data Parallel, Control Parallel

# Implementation aspects (1)

- \* How skeletons are presented to programmers ?
- \* The skeletons are compiled as templates or data-flow ?
- \* E.g. Template, Data-flow

# Implementation aspects (2)

- \* Which are the low-level libraries exploited?

- \* Eg. MPI, OpenMP, POSIX TCP/IP

- \* Which is the host language?

- \* E.g. Java, C/C++, Ocaml



# Target Architecture

- \* Which is the designated target architecture ?
- \* Homogeneous resources
- \* Heterogeneous resources

# Sample program

- \* Install howto
- \* Hello World!
  - \* coding, compiling, running
- \* Sample parallel program

# Let's start...

- \* ...with Skeleton Systems